

Why sample for PCBs?

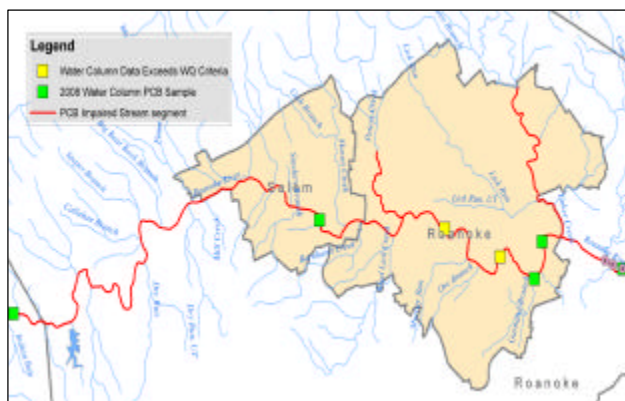
Virginia Water Quality Standards state all waters must support the fish consumption use. PCBs are just one of the contaminants DEQ investigates when analyzing fish tissue data. These data are used to determine the need for VDH Fish Consumption Bans and Advisories. The advisory on the Upper Roanoke River led to further monitoring of PCBs in the river, sediments and effluents at permitted facilities.



Virginia Water Quality Criteria		
Water	Sediment*	Fish Tissue
1700 pg/L	676 ppb	54 ppb

*Sediment value is used as a screening value for follow-up monitoring and does not indicate violations of a water quality standard.

What were the results?



All monitoring results are available on the DEQ website or by contacting the DEQ BRRO Roanoke Office. The results shown on the map above are only those collected for TMDL development during high flow conditions.

Contact Information

DEQ – Blue Ridge Regional Office

Roanoke – (540) 562-6700
3019 Peters Creek Road
Roanoke, VA 24019

Lynchburg – (434) 582-5120

7705 Timberlake Road
Lynchburg, VA 24502

DEQ – Central Office

TMDL Program
(804) 698-4462

Fish Tissue & Sediment Monitoring

(804) 698-4321

Virginia Department of Health

Office of Epidemiology
(804) 864-8141

Additional Information Online

DEQ TMDL Program

<http://www.deq.virginia.gov/tmdl>

PCB TMDLs

<http://www.deq.virginia.gov/tmdl/pcb.html>

Monitoring Results

<http://www.deq.virginia.gov/tmdl/mtgppt.html>

VDH Fishing Advisories

<http://www.vdh.virginia.gov/epidemiology/DEE/>

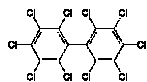
PCBs in the Upper Roanoke River Watershed



Total Maximum Daily Load Study

What are PCBs?

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners).



PCBs are either oily liquids or solids that are colorless to light yellow. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects.

ToxFAQs for Polychlorinated Biphenyls (PCBs) February 2001

What is a TMDL Study?

The Upper Roanoke River was first listed on the Virginia Impaired Waters List in 2002, based on the Virginia Department of Health (VDH) Fishing Advisory.

The Total Maximum Daily Load or TMDL Study is scheduled to be completed by 2010.

Objective: Reduce the amount of PCBs in the Upper Roanoke River Watershed.

Steps in the PCB TMDL Process

1. Identify PCB sources

DEQ collected and reviewed a variety of monitoring data from the watershed. A committee of local government officials, community members, business and other interested groups reviewed and tracked the progress of the study. Public meetings were held to explain the study and the results, as well as gather public comment. The U.S. Environmental Protection Agency will approve the TMDL once it is complete.

2. Identify ways to improve water quality.

What are the sources of the PCBs?

Source Categories: Contaminated Sites, Point Sources, Contaminated Streambed Sediments, Atmospheric Deposition

- The sources included in the water quality model were based on data availability.
- Data analysis identified specific congeners found both in effluents and river samples.
- Unknown contaminated sites represented by a Total PCBs potency factor assigned to urban land use areas.
- On-going source identification and assessments

What is the PCB reduction goal?

Water quality and fish tissue data were used to develop the PCB reduction goal. Meeting a water quality goal of **390 pg/L** will lead to reduced PCBs in fish tissue.

This goal was calculated using a factor that represents the ability of a Common Carp to absorb and retain PCBs. The factor considers when the fish, its food and environment are exposed to PCBs.



Image credit: PA Fish & Boat Commission

Common Carp were chosen as the most appropriate species to calculate the PCB reduction goal due to its regional significance and inclusion in the original VDH Fish Consumption Advisory.

Clean-up Plan

Adaptive Implementation

New data and information will be used to direct control strategies.

Implementation Plan

Required by Virginia's 1997 Water Quality Monitoring, Information and Restoration Act. The public will have opportunities to provide input and to participate in the development of the plan. An approved plan will help obtain financial and technical assistance.

Addressing Point Sources

Monitoring will take place at permitted facilities.

Pollution Minimization Plans (PMPs) for permitted facilities with PCBs detected in their final effluent will be required.

1. Dischargers will track PCBs within their systems, considering legacy issues at the site
2. PMPs contain specific actions, timetables, and assessment of the effectiveness of the actions.
3. Required to measure progress in reducing PCBs

Addressing Non-Point Sources

Contaminated streambed sediments are a significant on-going source of contaminating fish Tissue. Although costly, mechanical or vacuum dredging are options in hot spots. Natural attenuation and burial are considered action alternatives.

Follow-up Monitoring

As resources allow, monitoring will take place to assess progress made towards achieving the PCB reduction goal. Continued monitoring of fish tissue and sediment through the Statewide Fish Tissue and Sediment Monitoring Program.